



# 7140 Stereo Receiver

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Please note that this document contains the text from the original product brochure, and some technical statements may now be out of date



NAD is internationally recognised as the value leader in Hi-Fi, and the new 7140 stereo receiver provides an exceptional ratio of performance to price (even by NAD standards).

The tuner section of the 7140 combines the convenience and accuracy of digital frequency-synthesis tuning with superior stereo sensitivity and quieting.

The phono preamplifier, too, is audibly (and in some cases dramatically) quieter than many other preamp circuits, not only with moving-magnet pickups but also with low-output moving coil cartridges. The entire amplifier circuit has ample dynamic range for every program source, including the widest-range digital Compact Discs.

The powerful high-current output stage of the 7140 drives loudspeakers to surprisingly high volume levels with clean, solid, full-bodied musical sound and a refreshing freedom from distortion, even in transient peaks. The exclusive NAD impedance selector allows you to make maximum use of the amplifier's power regardless of the true impedance of your speakers.

The 7140 is conservatively rated at 40 watts/channel in the normal stereo mode, not only with test resistors but with loudspeakers of any impedance. Its 3 dB of IHF Dynamic Headroom means that it will deliver fully double its rated power (over 80 watts per channel) in brief bursts, important for undistorted reproduction of the uncompressed transients in Compact Discs and DBX-encoded recordings.

## **Digital-ready design**

The receiver's line-level inputs will not be overloaded by high-level signal peaks from a Compact Disc player or digital tape recorder. The 102 dB signal-to-noise ratio of the 7140 exceeds that of any analogue or digital program source. The low-impedance, low-noise design of the volume and tone control circuits guarantees that the transparent clarity of the finest analogue and digital recordings will be preserved.

## **Low-noise MM/MC phono preamplifier**

The phono preamplifier in the 7140 is a discrete (non-IC) design featuring a matched pair of extremely low-noise transistors in a differential input circuit. It interfaces correctly with the impedance of magnetic cartridges, and a rear-panel MM/MC selector increases the circuit gain by 20 dB for low-output moving-coil pickups. The preamp has a push-pull output circuit, like a miniature power amplifier, that provides ample current to drive the precision RIAA equalisation network without slewing distortion, and its large dynamic range (107 dB) comfortably accommodates all digitally-mastered LP recordings with room to spare.

As long as LPs remain a principal music source for many listeners, there must be no compromise in the quality of the phono preamp circuit.

### **High-current output stage**

Electrical power is the product of voltage and current, but current flowing through the voice coil is what makes a loudspeaker cone vibrate and reproduce sound. In many amplifiers the out-put current is deliberately constricted by current limiters (protection circuits), in order to allow the use of smaller, cheaper output transistors. But NAD engineers have always known, and other manufacturers have lately begun to realise, that to provide precise electromagnetic control of the speaker's motion the amplifier must be able to supply high peak currents upon demand. The NAD 7140 can produce peak currents in excess of 30 amperes per channel.

### **Loudspeaker impedance matching**

Standard lab tests of amplifiers use 8-ohm resistors in place of loud-speakers, but most loudspeakers have a lower and more complex impedance that increases the required amplifier output current. (And if you connect two pairs of loud-speakers, the effective impedance of the pair is halved.) For this reason the 7140, like all NAD amplifiers and receivers, is designed to deliver its maximum power into low impedances of 4 or even 2 ohms. But the exclusive NAD impedance selector allows you to re-optimize the 7140's amplifier circuit to deliver greater output voltage for maximum effective power delivery to loudspeakers whose true impedance is 8 ohms or higher.

### **Soft Clipping™**

NAD's trademarked Soft Clipping circuit gently limits the waveform when the amplifier is driven beyond its maximum power rating. By preventing the output transistors from being driven fully into saturation, the Soft Clipping reduces the harshness that is normally heard when an amplifier is overdriven. Because of this and the amplifier's high dynamic headroom, the sound of the 7140 remains clean and musical at high sound levels, rather than being distorted as in other amplifiers.

### **Bass EQ**

A special equalisation circuit provides 6 dB of boost at 32 Hz in order to strengthen and extend the deep-bass response of closed-box loudspeaker systems.

A typical bookshelf speaker that rolls off below 50 Hz will have strong output to 30 Hz when used with the NAD 7140, providing the sort of authentic bass "feel" that might otherwise require a costly separate subwoofer system.

### **Infrasonic filter**

Precise infrasonic filtering is included to eliminate signal contamination from turntable rumble, record warps, tonearm/stylus resonances, vibration and acoustic feedback. This guarantees the cleanest possible handling of signals within the audible range and eliminates the excessive woofer-cone excursions that can cause inter modulation distortion and muddy bass in systems with-out filtering.

### **Design for real-world conditions**

Tuner specifications are measured with a medium-strong signal (65 dBf, i.e., 1000  $\mu$ V into 300 ohms), but in the real world a tuner must perform well with signals of widely varying strength and quality. For example, an FM tuner's resistance to multipath interference depends on its ability to "capture" the desired signal and reject weaker reflected signals; the lower the tuner's capture ratio, the more efficiently it rejects the interference and captures clean stereo. The capture ratio of the NAD 7140 is consistently excellent, not only at the medium signal strengths where other tuners perform well, but also over the 100-to-1 range in signal level from 25 to 65 dBf, allowing many more stereo broadcasts to be received without distortion.

### **Optimum gains and losses**

In the I.F. section of any tuner the signal is both attenuated (by the high-selectivity filters) and re-amplified, by high-gain ICs. But the final signal-to-noise ratio can never be better than at the point where the signal is weakest. By optimizing the filter design to reduce losses, NAD's designers were able to eliminate an entire stage, reducing I.F. gain, and still deliver the optimum signal level to the PLL MPX decoder-obtaining an 80 dB stereo S/N ratio at 75 dBf.

## PRE-AMP SECTION

### Phono input

Input impedance <i>(R and C)</i>	47k $\Omega$ / 100pF
Input sensitivity <i>(1kHz, ref. rated power)</i>	3.2mV
Signal/Noise ratio <i>(A-weighted with cartridge connected)</i>	76dB ref. 5mV
THD <i>(20Hz - 20kHz)</i>	<0.04%
RIAA response accuracy <i>(20Hz - 20kHz)</i>	$\pm$ 0.5dB

### Line level inputs

Input impedance <i>(R and C)</i>	15k $\Omega$ / 100pF
Input sensitivity <i>(ref. rated power)</i>	160mV
Maximum input signal	>10V
Signal/Noise ratio <i>(A-weighted ref 1W)</i>	88dB
Frequency response <i>(20Hz - 20kHz)</i>	$\pm$ 0.5dB
Infrasonic filter	-3db at 15Hz, 24dB/octave
THD	0.01%

### Line level outputs

Output impedance	Pre-amp	600 $\Omega$
	Tape	Source Z + 1k $\Omega$
	Phones	220 $\Omega$
Maximum output level		12V
	Tape	8V
	Phones	>10V into 600 $\Omega$ >500mV into 8 $\Omega$

### Tone controls

Treble	$\pm$ 7dB at 10kHz
Bass	$\pm$ 10dB at 50Hz
Bass EQ	+3dB at 70Hz +6dB at 40Hz

## POWER AMP SECTION

Continuous output power into 8 $\Omega$ *	40W (16dBW)	
Rated distortion <i>(THD 20Hz - 20kHz)</i>	0.03%	
Clipping power <i>(maximum continuous power per channel)</i>	50W	
IHF Dynamic headroom at 8 $\Omega$	+6dB	
IHF dynamic power <i>(maximum short term power per channel)</i>	8 $\Omega$	160W (22dBW)
	4 $\Omega$	200W (23dBW)
	2 $\Omega$	250W (24dBW)
Damping factor <i>(ref. 8<math>\Omega</math>, 50Hz)</i>	>50	
Input impedance	22k $\Omega$ / 880pF	
Input sensitivity <i>(for rated power into 8<math>\Omega</math>)</i>	1V	
Frequency response	6Hz - 50kHz +0, -3dB	
Signal/noise ratio	ref. 1W	100dB
	ref. rated power	116dB
THD <i>(20Hz - 20kHz)</i>		<0.03%

**FM TUNER SECTION**

Input sensitivity	Mono -30dB THD+N	10.3dBf (1.8 $\mu$ V/300 $\Omega$ )
	Mono 30dB S/N	14.2dBf (2.8 $\mu$ V/300 $\Omega$ )
	Stereo 50dB S/N	36dBf (34 $\mu$ V/300 $\Omega$ ) FM NR off
		29dBf (16 $\mu$ V/300 $\Omega$ ) FM NR on
	Stereo 60dB S/N	46dBf (110 $\mu$ V/300 $\Omega$ ) FM NR off
		40dBf (56 $\mu$ V/300 $\Omega$ ) FM NR on
Capture ratio (45 - 65dBf)		<1.5dB
AM rejection (45 - 65dBf)		>60dB
Selectivity, alternate channel		65dB
Image rejection		70dB
I F rejection		90dB
Harmonic distortion	Mono	0.09%
	Stereo	0.09%
Signal/Noise ratio	Mono	>80dB
	Stereo	>75dB
Frequency response $\pm$ 0.5dB		30Hz - 15kHz
Channel separation at 1kHz		50dB

**AM TUNER SECTION**

Usable sensitivity		300 $\mu$ V
Selectivity		35dB
Image rejection		50dB
I F rejection		35dB
Signal/Noise ratio		45dB
Harmonic distortion		0.5%
Remote		No
NAD Link		No

**PHYSICAL SPECIFICATIONS**

Dimensions (W x H x D)	420 x 108 x 380mm
Net weight	7.5kg
Shipping weight	9.0kg
Power consumption (120 ~ 240V, 50/60Hz)	240VA

\* Minimum power per channel, 20Hz - 20kHz, both channels driven with no more than rated distortion.

Dimensions are of unit's cabinet without attached feet; add up to 18mm for total height.

Dimension depth excludes terminals, sockets, controls and buttons.

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